LArFCS System Integration and Commissioning Plan

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Outline

- Flange Design
- Stages
- Critical Path towards the goal
- Collaborations

Integration: Top Flange Design

1. Build an all-in-one flange is hard and not easy for modification/upgrades

2. We can distribute the functions to several flanges, each with an individual opening on the top flange for a subsystem

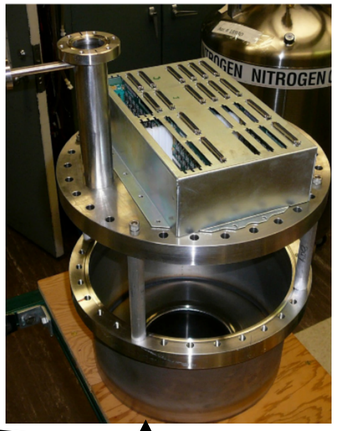
3. The existing flange design for 20-L system can satisfy our need for cryogenic

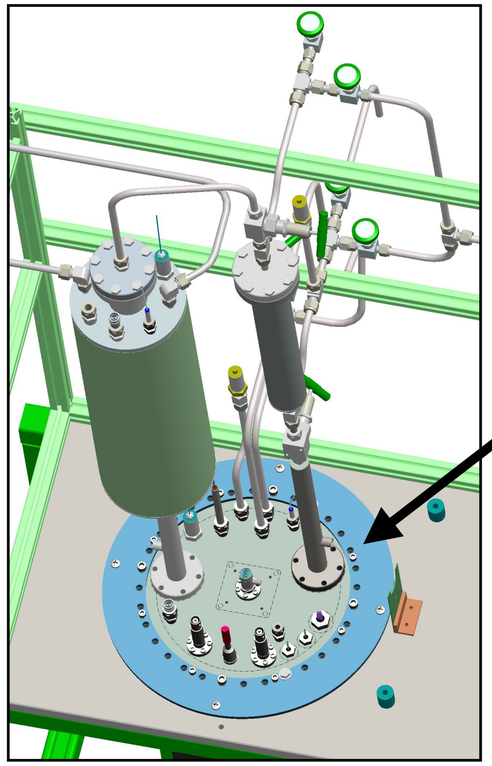
4. The slow control sensors and cryogenic feeding can all go through this feed thru

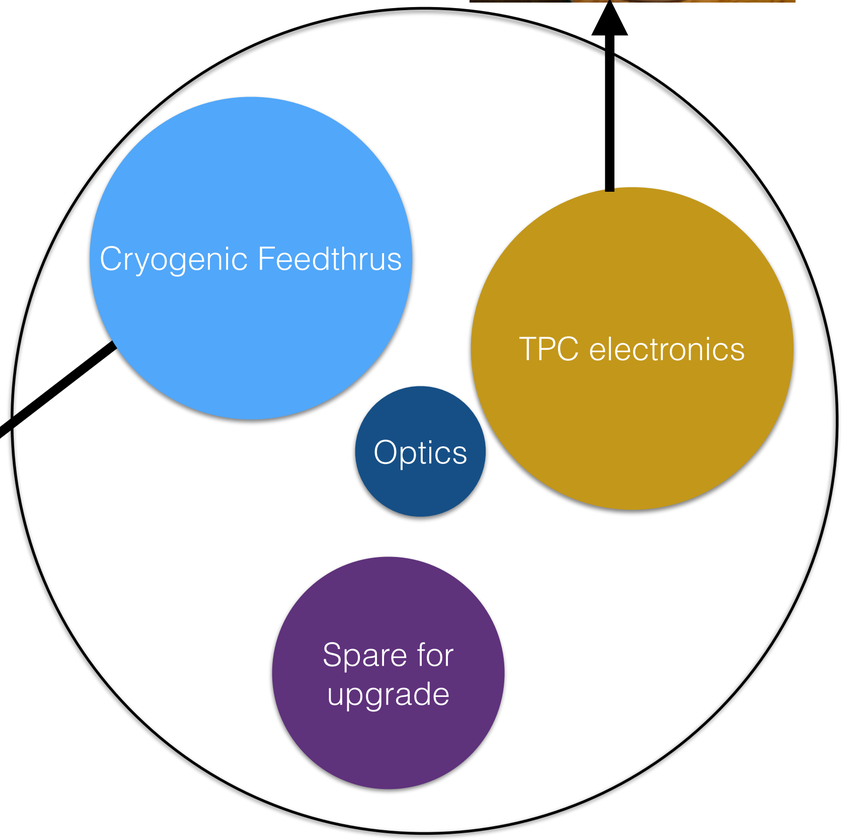
5. The TPC electronics feed uses the MicroBooNE flange

6. Need to make a new one for optics

7. Also need a careful ground scheme







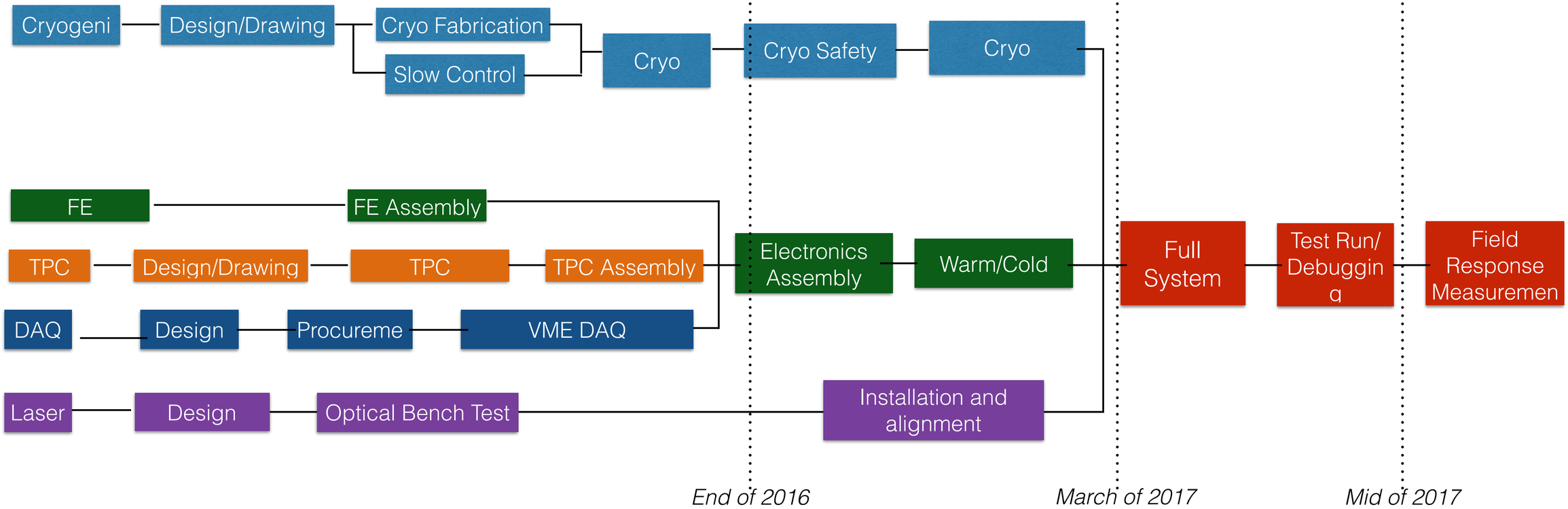
Stages

- Stage1: Cryogenic system construction
  TPC design/assembly
  FEE electronics construction
  DAQ construction
  Optical construction
  Safety review preparations

- Stage2: Cryogenic commissioning
  Full chain electronics test in warm/cold
  Laser install and alignment
  Safety walk-through and approval
  Engineering run

- Stage3: Full system assembly
  Test run and debugging
  Field Response Measurement

Critical Path towards the goal



1. The system requires low electronics noise. A good ground scheme is required to achieve it.

2. The preparation of safety review also needs to be taken into consideration

3. The production of the parts may take long time

Collaborations

- We will work closely with Instrumentation Division internally
- We've already had some other institutions including Yale, UCI showing their interests for collaboration
- We are expecting some graduate students to come to work with us

Conclusions

- The LArFCS now has strong physics motivation and clear technical goals
- The system integration is important to achieve the success
- We plan to move in a fast pace as the requirement of knowing field response function is very time sensitive
- It needs great effort and commitment from the whole team to carry out the plan